NRM MISC

RP-NRM
TIMBER CONVERSION
Grades and Specifications

REVIEW OF CROSS TIE SPECIFICATIONS

November 1, 1952

These are the latest cross tie specifications, as well as the prices in effect at the present time, as furnished to us by the following railway companies:

Chicago, Milwaukee, St.Paul and Pacific Railroad Company
Great Northern Railway Company
Northern Pacific Railway Company
Spokane International Railroad Company

Information compiled by the
Forest Utilization Service
Northern Rocky Mountain Forest and Range Experiment Station
Forest Service
Missoula, Montana

CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC RAILROAD COMPANY

Specifications and Prices for Cross Ties

Information from C. S. Finlayson, Asst. to Chief Purchasing Officer, Seattle, Washington, September 5, 1952:

Cross ties purchased under West Coast Lumbermen's Association Grading Rules No. 14, paragraph 405.

405. SELECT TIES. Must be sound, square-edged, not less than 6 annual rings per inch, on any radius from the pith, over the top one-fourth of the tie. Will admit:

Knots - sound, tight, 1/4 width of face
Checks - seasoning
Pitch pockets
Sap - not limited
Variation in length--1" under or over
Variation in size--1/8" under; 1/2" over.

PRICES: Buying red-fir, white-fir and larch cross ties in the Idaho territory at a price of $62.50 M. FBM. f.o.b. cars our tracks. These are 7 x 8, 8'6" and are purchased under above grading rules.

GREAT NORTHERN RAILWAY COMPANY

Specifications and Prices for Cross Ties

Kind: Fir, Pine, Tamarack (Larch) and Hemlock.

Quality: All ties shall be made from sound, live timber, free from any defects that may impair their strength or durability as cross ties, such as decay, pitch seams, splits, shakes, holes, large or numerous knots, grain with slant greater than one in fifteen, or other imperfections.

Grade	Length	Sawed Top, Bottom and Sides	Sawed or Hewed Top & Bottom
3	8½'	6" thick x 8" wide	6" thick x 8" wide and larger
4	8½'	7" thick x 8" wide	7" thick x 8" wide and larger
5	8½'	7" thick x 9" wide	7" thick x 9" wide and larger

Resistance to wear: Ties shall be of compact wood through the top fourth of the tie, where any inch of any radius from the pitch shall not have less than one-third summerwood in six or more rings of annual growth, or not less than one-half summerwood in fewer rings. Ties of coarse wood having fewer rings or less summerwood will not be accepted.

Resistance to decay: Ties for use without preservative treatment shall not have sapwood wider than one-fourth the width of the top of the tie between 20 inches and 40 inches from the middle.

Manufacture: All ties shall be straight, well hewed, slabbed or sawed, cut square at the ends, and have bottom and top parallel. All hewed and slabbed ties must be peeled entirely free of bark. No ties will be accepted having the pith or heart in any corner.

Inspection: A large knot is one exceeding in width more than 1/4 of the width of the surface on which it appears, but such a knot may be allowed if it occurs outside the sections of the tie between 20 inches and 40 inches from its middle. Numerous knots are any number equalling a large knot in damaging effect. A shake is a separation of one ring of annual growth from another. A split is a break across annual rings. Ties having such defects will not be accepted.

Variations in lengths, thicknesses, and widths will be allowed as follows:

Length: 2 inches over or 1 inch under the designated length
Thickness: 1/2 inch over and 1/8 inch under the designated thickness
Width: 3 inches over and 1/8 inch under the designated width

Prices: A. N. Crenshaw, Purchasing Agent, advises that they are purchasing cross ties in the Montana territory at prices based on $52 per MBM, resulting in the following each prices:

Grade 3 . . . . . $1.77 each
Grade 4 . . . . . 2.06 each
Grade 5 . . . . . 2.32 each

These prices apply delivered and piled on right of way at designated landings in accordance with standard practices. Ties are furnished on contract orders furnished from the St. Paul office, and local matters are handled by Chief Tie Inspector D. S. Cameron, 263 Second Avenue, N.W., Kalispell, Montana.

NORTHERN PACIFIC RAILWAY COMPANY

Specifications and Prices for Cross Ties

Specification E-128

MATERIAL

1. Kinds of Wood: Before manufacturing ties, producers shall ascertain which of the following kinds of wood suitable for cross ties will be accepted:

Broadleaved Trees
(Hard Woods)

Birch	Elm(Rock)
Beech	Oak(White)
Maple	Oak(Red)

Needleleaved Trees
(Soft Woods)

Douglas-fir (Inland Empire)	Western Yellow Pine
Hemlock " "	Lodgepole Pine
Larch " "	

PHYSICAL REQUIREMENTS

2. General Quality: All ties shall be free from any defects that may impair their strength or durability as cross ties, such as decay, large splits, large shakes, large or numerous holes or knots, grain with slant greater than 1 in 15.

3. Resistance to Wear: Ties from needleleaved trees shall be of compact wood throughout the top one-fourth of the thickness with not less than six rings of annual growth in any inch of any radius from the pith.

DESIGN

4. Dimensions: Before manufacturing ties, producers shall ascertain which of the following lengths, shapes, or sizes will be accepted, and whether ties are to be hewed, or sawed and in either case whether on the sides as well as on the top and the bottom.

All ties shall be 8 feet long, except size 4-A made from hard woods, and size 5 made from either hard woods or soft woods, which shall be 8 feet 6 inches long.

All ties shall measure as follows throughout both sections between 20 inches and 40 inches from the middle of the tie:

Size	Sawed or hewed top, bottom and sides	Sawed or hewed top and bottom
1	None accepted	6" thick x 6" wide on top
2	6" thick x 7" wide on top	6" " x 7" " " "
3	6" " x 8" " " "	(6" " x 8" " " "
		(7" " x 7" " " "
4	7" " x 8" " " "	7" " x 8" " " "
4-A	7" " x 8" " " "	7" " x 8" " " "
5	7" " x 9" " " "	7" " x 9" " " "

MANUFACTURE

5. All ties shall be straight, well hewed or sawed, cut square at the ends, have bottom and top parallel, and have bark entirely removed.

INSPECTION

6. Ties will be inspected after delivery at suitable and convenient places satisfactory to the railroad, which reserves the right to inspect ties at points of shipment or at destination. Ties will be inspected at points other than the railroad's property whenever in the judgment of the railroad there is sufficient number to warrant it; but the shipper shall provide accommodations for the inspector while away from rail or steamer lines and transport him from and to a railroad station or steamer landing.

7. Inspectors will make a reasonably close examination of the top, bottom, sides and ends of each tie. Each tie will be graded independently without regard for the grading of others in the same lot. Rafted or boomed ties too muddied for ready examination will be rejected. Ties handled over hoists shall be turned over as inspected.

8. A large hole is one more than 1/2" in diameter and 3" deep within, or more than 1" in diameter and 3" deep outside the sections of the tie between 20" and 40" from its middle. Numerous holes are any number equaling a large hole in damaging effect. Such holes may be caused in manufacture or otherwise.

9. A large knot is one exceeding in width more than one-fourth of the width of the surface on which it appears; but such knot may be allowed if it occurs outside the sections of the tie between 20" and 40" from its middle. Numerous knots are any number equaling a large knot in damaging effect.

10. A shake is a separation of one ring of annual growth from another. One which is not over 4" long or 1/4" wide will be allowed.

11. A split is a break across annual rings. One which is not over 5" long will be allowed provided satisfactory anti-splitting devices have been properly applied.

12. A tie will be considered straight (1) when a straight line along the top from the middle of one end to the middle of the other end is entirely within the tie; (2) when a straight line along a side from the middle of one end to the middle of the other is everywhere more than 2" from the top and bottom of the tie.

13. A tie is not well hewed or sawed when its surfaces are cut into with scar marks more than 1/2" deep or when its surfaces are not even.

14. The top and bottom of a tie will be considered parallel if the difference in the thicknesses at the two sides or ends does not exceed 1/2"; that is, one side may be 7-1/4" while the other is 6-3/4" wide; or one end may be 6-3/4" while the other is 7-1/4" thick.

15. The thicknesses and width specified are the minima for the standard sizes. Ties over 2" longer will be rejected, but occasional ties not more than 1" shorter will be accepted. Ties over 1" thicker or wider than the standard sizes will be rejected.

16. All thicknesses and width apply to the sections of the tie between 20" and 40" from the middle of the tie. All determinations of width will be made on the top of the tie, which is the narrower of the horizontal surfaces.

DELIVERY

17. Ties delivered on the premises of the railroad for inspection shall be stacked not less than 10 feet or more than 30 feet from the nearest rail or any track at or above grade at suitable and convenient places for loading; but not at public crossings, nor where they will interfere with the view of trainmen or of people approaching the railroad. Piling ground shall be designated by the Station Agent or Section Foreman, and ties must not be piled on top of or mixed with those already inspected. Ties shall be stacked in alternate layers of 2 and 7, the bottom layer to consist of 2 ties kept at least 6" above the ground. The second layer shall consist of 7 ties laid crosswise of the first layer. When the ties are rectangular, the two outside ties of the layers of seven shall be laid on their sides. The ties in layers of two shall be laid at the extreme ends of the ties in the layers of seven. No stack may be more than 12 layers high, and there shall be 5 feet between stacks to facilitate inspection. Ties which have stood on their ends on the ground will be rejected.

18. Under certain local conditions outlined by the Railway Company, ties may be ranked like cordwood, in which case the owner shall rehandle them while inspection is being made.

19. Each stack shall have fastened to it a tag on which is written the owner's name and address, the date when stacked, and the number of ties of each kind of wood in the stack.

20. All ties are at the owner's risk until accepted. All rejected ties shall be removed within one month after inspection.

21. Railway Company inspector will designate accepted ties by marking on the ends with stamping hammers. All ties shall be free from private paint marks.

PRICES

The current price paid for cross ties f.o.b. tracks in the Inland Empire area is $54.50 per 1000 feet, ft.b.m.

SPOKANE INTERNATIONAL RAILROAD COMPANY

Specifications and Prices for Cross Ties
(Do not publish a specification sheet)

Kind of wood: Douglas-fir, western larch and ponderosa pine.

Quality: All ties being treated with a 50 percent petroleum and 50 percent creosote mixture with 7 pounds of preservative per cubic foot. All ties are incised and bored for plates of different dimensions, i.e., for 72 pounds, 85 pound and 90 pound rails.

Dimensions: No. 1 - 7" thickness x 9" face x 8' length
No. 2 - 6" " x 8" " x 8' "

Prices

No. 1 Ties

F.O.B. our cars	$1.99½ each
Piled for air drying (Sidings)....	1.99½ "
Landed on ground our sidings.....	1.94½ "
Usable rejects	1.00 "

No. 2 Ties

F.O.B. our cars	1.36 each
Piled for air drying (Sidings) ...	1.36 "
Landed on ground our sidings	1.31 "
Usable rejects	1.00 "

(Only 10 percent of No. 2 ties will be accepted at any one inspection.)

Affidavits must accompany each Tie Inspection Report.

For further information write or contact M. Bobich, Roadmaster, Sandpoint, Idaho, or T. F. Murphy, Purchasing Agent, P.O.Box 2147, Spokane 1, Washington.